BAA Radio Astronomy Group. **2012 JANUARY**

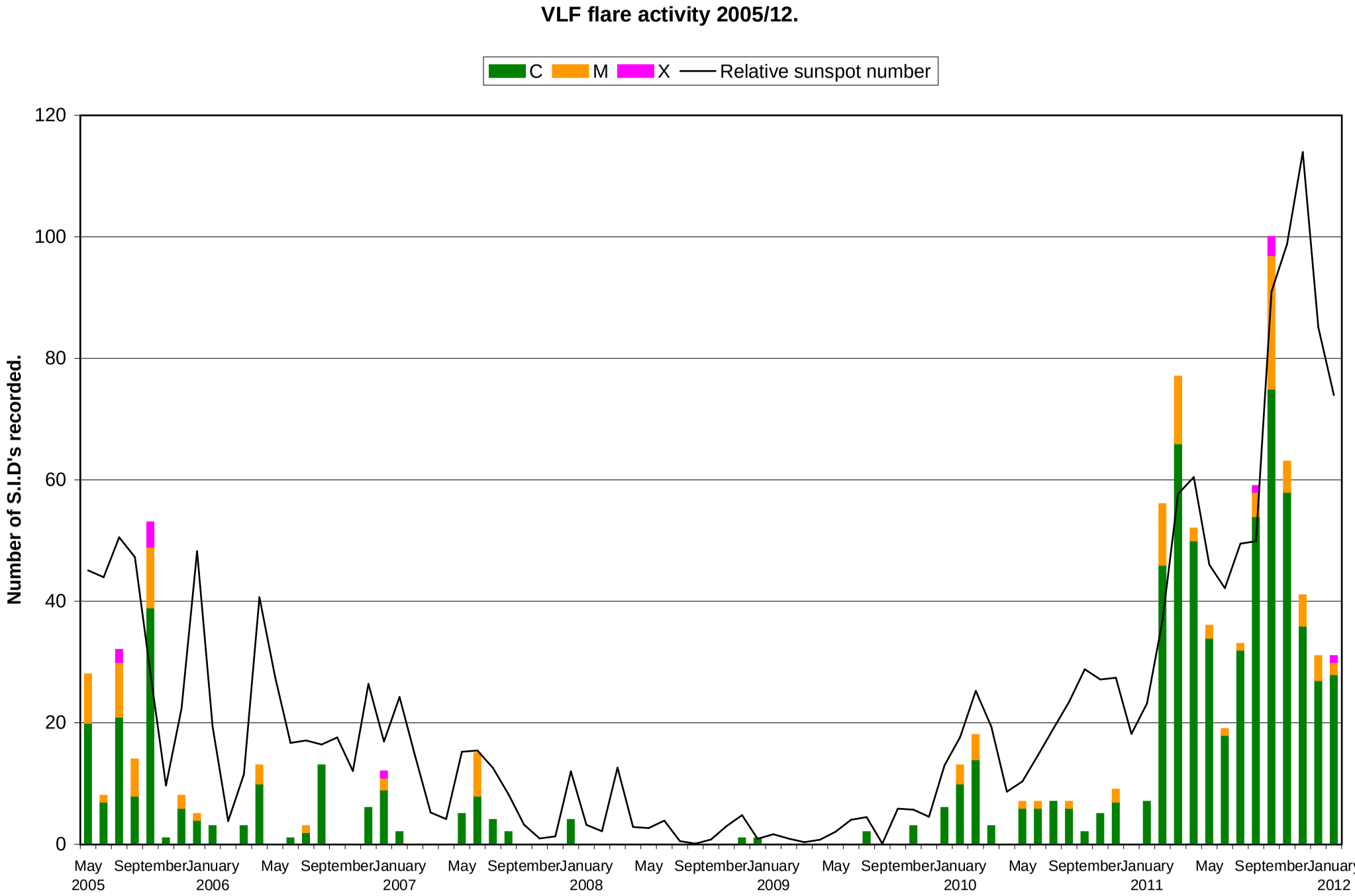
			John Cook (23.4kHz/*22.1kHz*)				Roberto Battaiola (18.3kHz)				Andrew Lutley (23.4kHz)				Bob Middlefell (22.1kHz)				Mark Edwards (19.6/24.0/*37.5kHz*)			
	Xray class	Observers	Tuned radio frequency receiver, 0.58m frame aerial.				Modified AAVSO receiver.				Tuned radios frequency receiver, 0.5m frame aerial.				Tuned radio frequency receiver, 0.5m frame aerial.				Spectrum Lab / PC 2m loop aerial.			
DAY			START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
2	C2.4	1																				
4	C1.5	1																				
4	C1.3	1																				
5	C2.1	1																				
6	C2.2	2																	*11:19*	*11:26*	*11:34*	*1-*
8	C1.8	2																				
8	C1.3	1																				
9	C1.1	1																				
9	C1.4	1																				
11	C1.6	1																				
12	C2.5	1																	*10:00*	*10:10*	*10:29*	*1+*
12	C3.3	3																	13:14	13:23	14:27	2+
14	C4.1	7	12:00	12:07	12:27	1+													*12:00*	*12:08*	*12:28*	*1+*
14	*	1																	*12:35*	*12:49*	*?*	-
14	**M1.4**	8	13:16	13:18	13:45	1+													13:16	13:19	13:33	1-
14	C2.8	1																	18:38	18:41	18:48	1-
15	C1.0	1																				
16	C3.9	2																				
16	C5.5	5	10:33	10:37	11:15	2													10:35	10:40	10:58	1
16	*	1																	**11:05**	**11:11**	**11:19**	**1-**
18	C1.0	1																				
18	C2.4	1																				
19	C3.2	3																	12:46	12:53	13:13	1+
19	**M3.2**	2																	14:40	15:28	17:52	3+
21	C2.4	2																	13:40	13:43	13:53	1-
22	C2.2	2					08:50	08:54	08:59	1-												
22	*	1																	**10:57**	**11:02**	**11:16**	**1**
22	*	2																	***11:51***	***11:56***	***12:09***	***1-***
22	C3.7	6					12:40	12:55	13:13	2									12:41	12:55	13:04	1
24	C2.5	4					09:49	09:52	10:04	1-									**09:52**	**09:54**	**09:57**	**1-**
26	C2.7	2					10:04	10:14	10:22	1-												
27	C1.4	2					12:00	12:11	12:26	1+												
27	C1.0	1																				
27	**X1.7**	1																	18:11	18:35	20:01	3
28	C1.0	1																				

			Colin Clements (23.4kHz/*37.5kHz*)				Peter Meadows (23.4kHz)				Mike King (20.9kHz)				John Wardle (19.6/23.4kHz)				Peter King (20.9kHz)			
			AAVSO receiver, 0.76m screened loop aerial.				Tuned radio frequency receiver, 0.58m frame aerial.				AAVSO receiver. Tuned loop aerial.				PC soundcard, long wire aerial.				Own designed receiver, 1.4m loop aerial.			
DAY			START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
2	C2.4														15:22	15:26	15:30	1-				
4	C1.5																		08:58	09:00	09:05	1-
4	C1.3																		11:00	11:05	11:15	1-
5	C2.1																		11:50	12:40	13:00	2+
6	C2.2																		11:15	11:25	11:35	1
8	C1.8																		13:15	13:20	13:25	1-
8	C1.3																		14:55	15:00	15:03	1-
9	C1.1																		10:30	10:42	10:49	1
9	C1.4																		14:50	14:55	16:00	2+
11	C1.6																		11:05	11:14	11:20	1-
12	C2.5																					
12	C3.3														13:13	13:22	13:35	1	13:10	13:25	13:35	1
14	C4.1														12:01	12:09	12:32	1+	12:00	12:10	12:20	1
14	*																					
14	**M1.4**		13:16	13:18	13:24	1-									13:16	13:19	13:43	1+	13:15	13:18	13:20	1-
14	C2.8																					
15	C1.0																		10:58	11:00	11:05	1-
16	C3.9														08:16	08:20	08:24	1-	08:10	08:14	08:20	1-
16	C5.5														10:33	10:41	11:06	2				
16	*																					
18	C1.0																		09:50	09:55	09:59	1-
18	C2.4																		10:15	10:30	10:45	1+
19	C3.2																		12:40	12:50	13:00	1
19	**M3.2**																		13:45	16:05	17:50	3+
21	C2.4																		13:35	13:44	14:00	1
22	C2.2																		08:50	08:55	09:00	1-
22	*																					
22	*		11:27	11:51	12:11	2																
22	C3.7		12:41	12:48	12:58	1-													12:40	12:55	13:45	2+
24	C2.5																		09:45	09:55	10:00	1-
26	C2.7																		10:00	10:10	10:20	1
27	C1.4																		12:00	12:05	12:15	1-
27	C1.0																		13:00	13:05	13:10	1-
27	**X1.7**																					
28	C1.0																		15:30	15:35	15:40	1-

BAA Radio Astronomy Group. **2012 JANUARY**

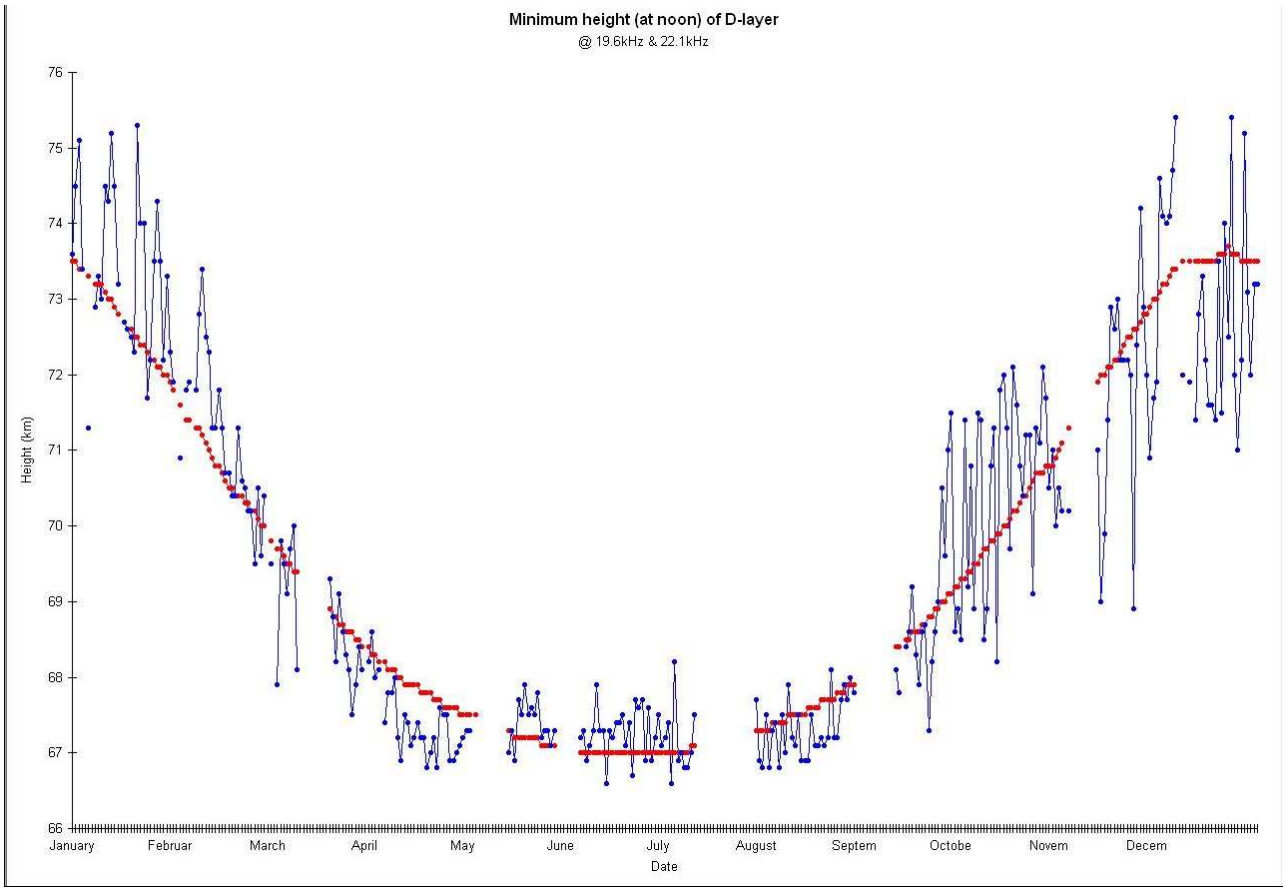
			Paul Hyde (22.1kHz)				Gordon Fiander (23.4kHz)				John Elliott (21.7kHz)				Martyn Kinder (19.6kHz/*22.1khz*)				Mark Horn (23.4kHz)			
			Tuned radio frequency receiver, 0.96m frame aerial.				PC sound card.				Tuned radio frequency receiver, 0.5m frame aerial.				Tuned radio frequency receiver, 0.58m frame aerial.				Tuned radio frequency receiver, 0.58m frame aerial.			
DAY			START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
2	C2.4																					
4	C1.5																					
4	C1.3																					
5	C2.1																					
6	C2.2																					
8	C1.8		13:16	13:19	13:29	1-																
8	C1.3																					
9	C1.1																					
9	C1.4																					
11	C1.6																					
12	C2.5																					
12	C3.3																					
14	C4.1		12:01	12:08	12:28	1+									*12:00*	*12:06*	*12:14*	*1-*				
14	*																					
14	**M1.4**		13:16	13:19	13:33	1-									13:16	13:19	13:24	1-				
14	C2.8																					
15	C1.0																					
16	C3.9																					
16	C5.5		10:35	10:39	11:00	1									10:32	10:42	11:10	2				
16	*																					
18	C1.0																					
18	C2.4																					
19	C3.2		12:45	12:52	13:01	1-																
19	**M3.2**																					
21	C2.4																					
22	C2.2																					
22	*																					
22	*																					
22	C3.7		12:41	12:48	13:09	1+																
24	C2.5		09:49	09:54	10:04	1-																
26	C2.7																					
27	C1.4																					
27	C1.0																					
27	**X1.7**																					
28	C1.0																					

			Steve Parkinson (23.4/19.6kHz)				Simon Dawes (various)				Gonzalo Vargas (Various)											
			Tuned radio frequency receiver, 0.58m frame aerial.				PC soundcard and TRF receiver with 1m loop aerial.				Spectrum Lab.											
DAY			START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
2	C2.4																					
4	C1.5																					
4	C1.3																					
5	C2.1																					
6	C2.2																					
8	C1.8																					
8	C1.3																					
9	C1.1																					
9	C1.4																					
11	C1.6																					
12	C2.5																					
12	C3.3																					
14	C4.1		12:02	12:08	12:16	1-																
14	*																					
14	**M1.4**		13:17	13:18	13:37	1																
14	C2.8																					
15	C1.0																					
16	C3.9																					
16	C5.5																					
16	*																					
18	C1.0																					
18	C2.4																					
19	C3.2																					
19	**M3.2**																					
21	C2.4																					
22	C2.2																					
22	*																					
22	*																					
22	C3.7		12:42	12:49	13:07	1																
24	C2.5																					
26	C2.7																					
27	C1.4																					
27	C1.0																					
27	**X1.7**																					
28	C1.0																					


VLF flare activity 2005/12.
C
M
X
Relative sunspot number
Number of S.I.D's recorded.
120
100
80
60
40
20
0
May
September
January
2005
2006
2007
2008
2009
2010
2011
2012

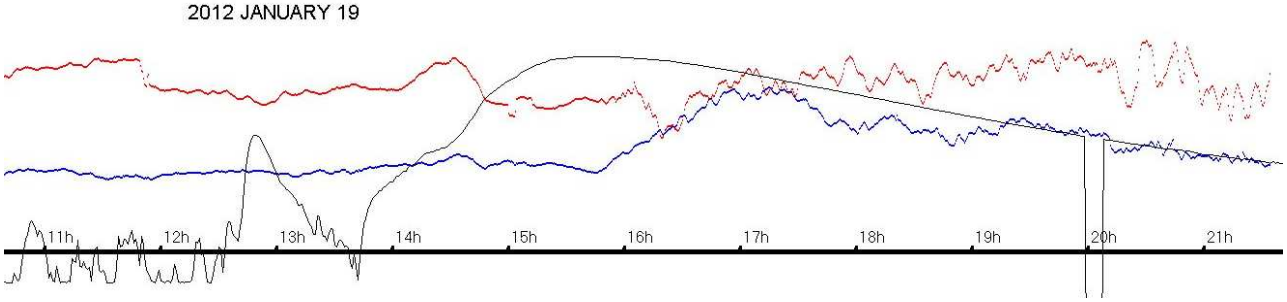
2012 JANUARY.

To conclude 2011 activity, Mark Edwards has supplied a chart of D layer heights at mid-day through the year. The minimum height was 67km (also 67km in 2010), and the maximum was 71.6km (73.6km in 2010).



2012 has started much as 2011 ended, with lower solar activity and noisy VLF signals. There was a single X-class flare, just after sunset here but recorded as a SID on the signal from NAA at 24kHz in America.

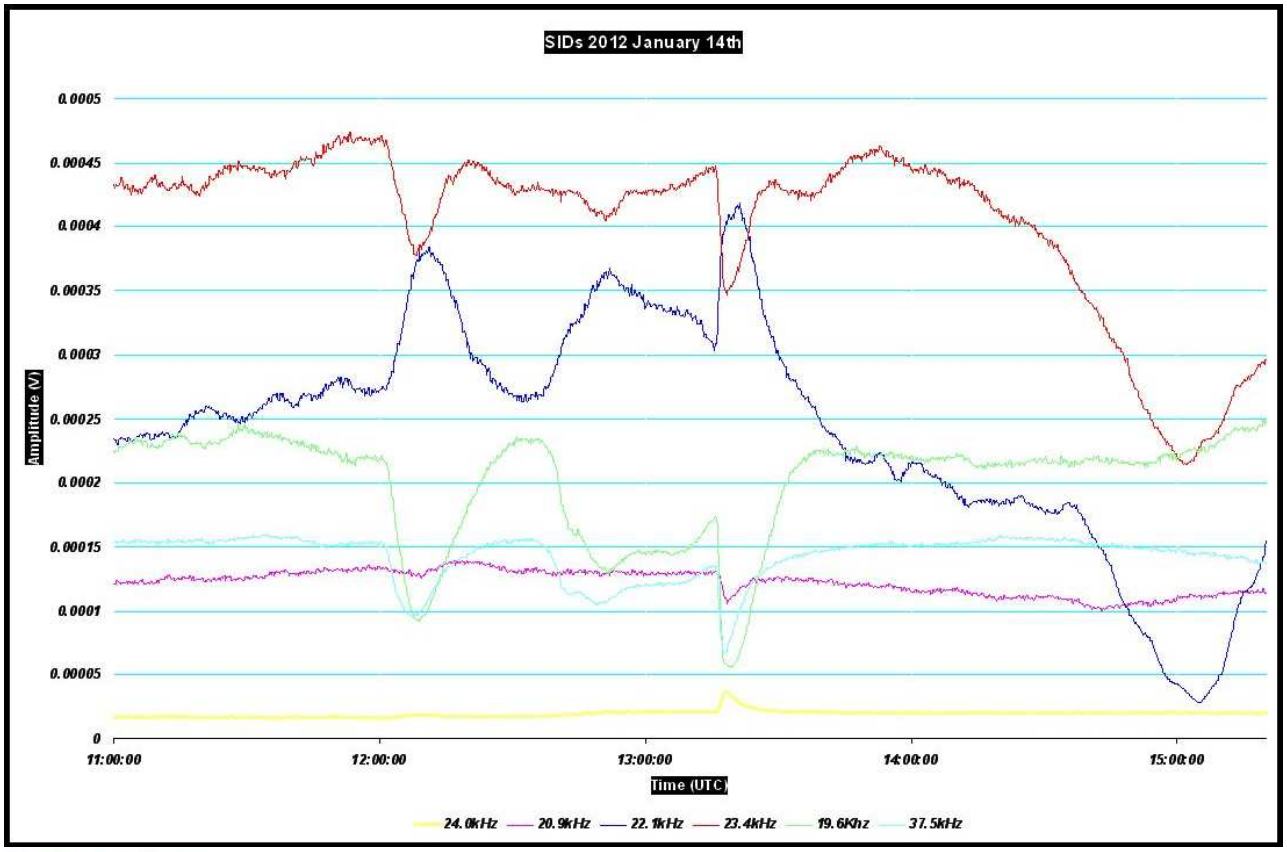
Two very slow X-ray flares have caused some difficulties. The C2.5 event on the 12th lasted about 6.5 hours, while the M3.2 on the 19th lasted well over 8.5 hours.

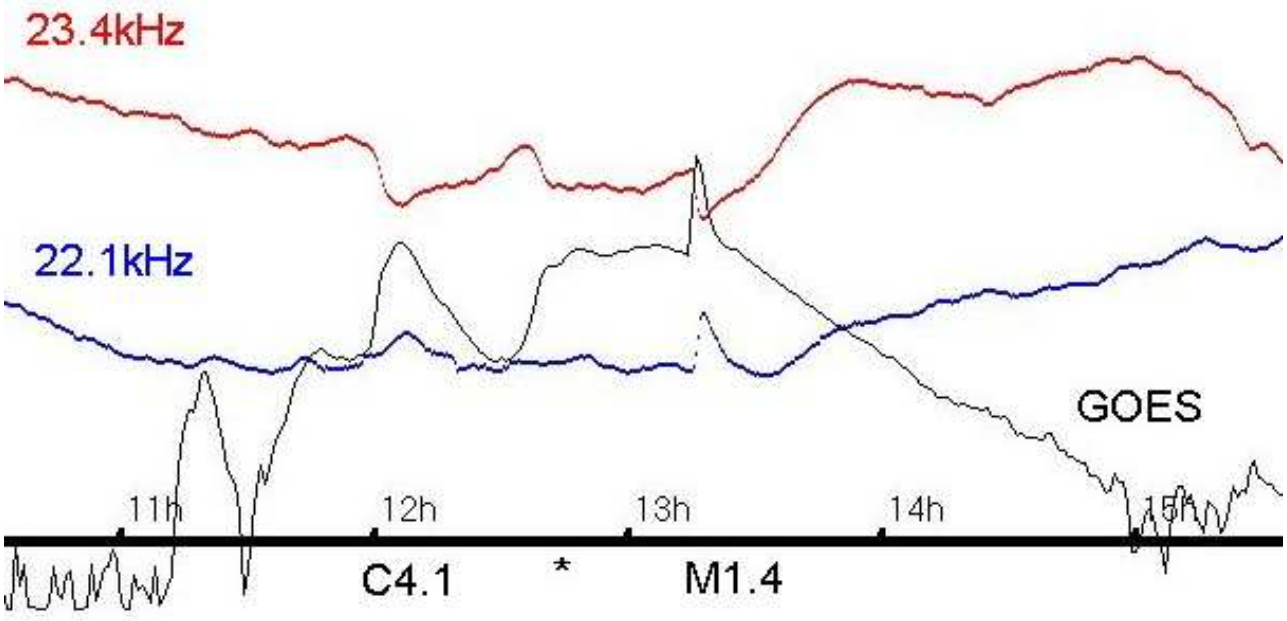


I have added the GOES X-ray data (black) on to my recording at23.4kHz (red) and 22.1kHz (blue). Neither signal shows anything that looks like a SID, and several observers have reported similar

results. I suspect that the very slow rate of change of ionisation during the flare has camouflaged its effect.

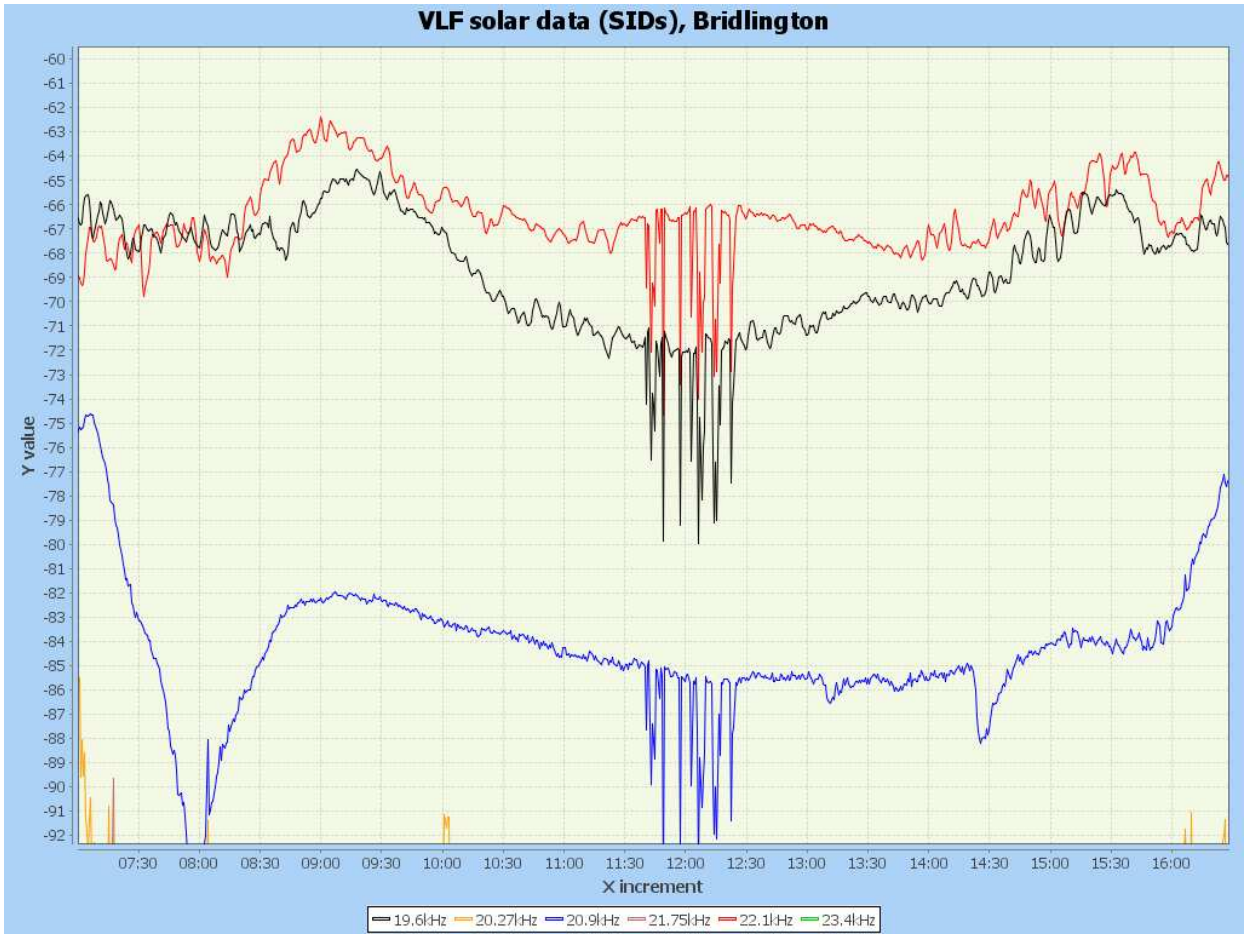
On the 14th, a small peak in X-ray flux at about 12:50 was not identified by SWPC as a separate flare, but recorded as a SID. Mark's chart shows the SID on several signals:





I have added the GOES data to my own chart. The SID is not clear with me at 23.4kHz, but does show at 22.1kHz. The C4.1 and M1.4 flares were the most widely recorded SIDs of the month.

Following on from last month, rapid oscillations were observed on several days in early January. They faded away after the 7th, with very little seen since then. John Wardle sent a copy of his chart for December 28th:



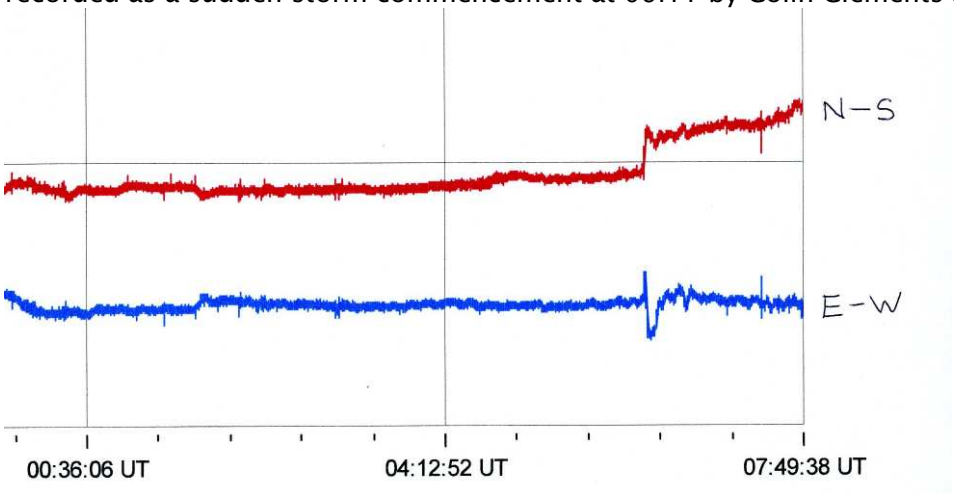
The large burst of noise around midday was local interference, but the noisy signals at 19.6 and 22.1kHz are evident over the whole recording. The 20.9kHz signal is much cleaner. Colin Clements also recorded a noisy period around sunset on the 25th January.
Mark has produced some spectra from his data. I have added them at the end of the summary. Although there are a lot of peaks in these spectra, there does seem to be a cluster of stronger peaks at 2..4mHz (4 to 8 minute periods) on those days where these oscillations were present.

I have changed the format of the activity chart to give a clearer picture of the monthly counts of SIDs. It now also includes the relative sunspot number courtesy of the BAA solar section. This is a 13 month smoothed average of actual sunspot numbers, which I hope conveys the general trend of visual solar activity. I exclude SIDs from B-class flares, as our detection of these is not a real indication of solar activity, but relates more to our aerials and receiving systems. They are still listed in the tables when they are recorded.

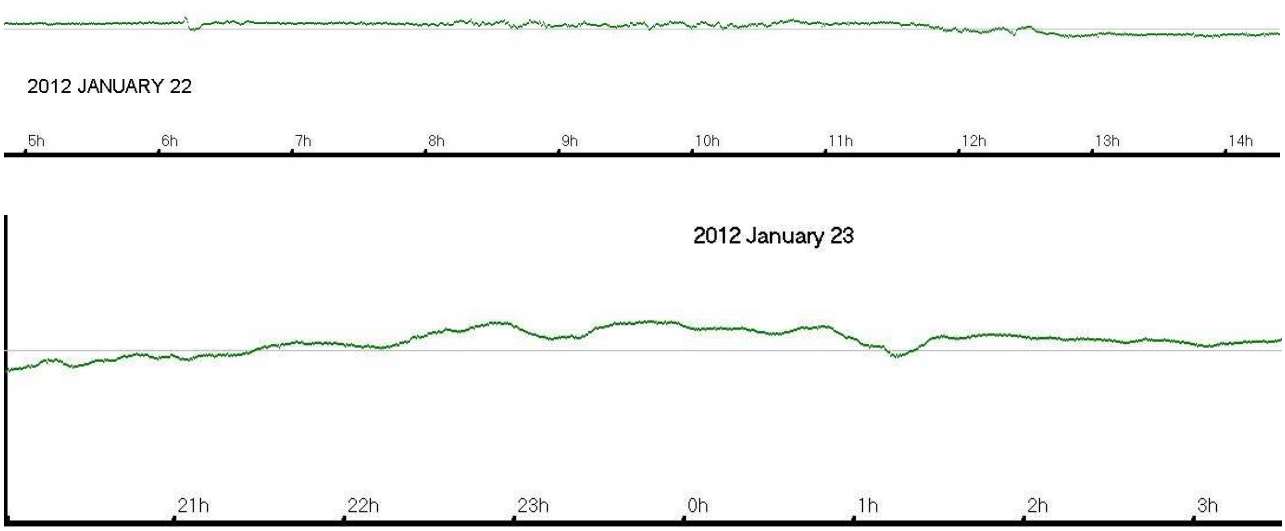
MAGNETIC DATA.

Although many days in January are shown as disturbed, most of this was at a very low level from coronal hole effects. The active period shown from the 22nd to the 24th. was also fairly modest,

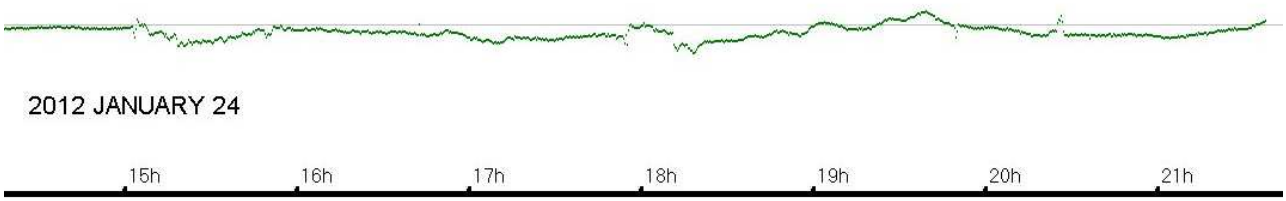
but with some more rapid fluctuations. A CME on the 19th reached Earth on the 22nd, and was recorded as a sudden storm commencement at 06:11 by Colin Clements and myself.



Colin's recording (above) clearly shows a transient in the E-W magnetic field.



My own charts are more compressed on the vertical axis, but show the initial transient at 06:11 followed by a relatively steady field over the next 8 hours. Later on the 22nd and into the 23rd the field becomes much more disturbed with +/- 50nT variations. Another CME on the 23rd caused the disturbance to continue into the 24th with +/- 40nT variations following a sudden storm commencement at 15:04UT.

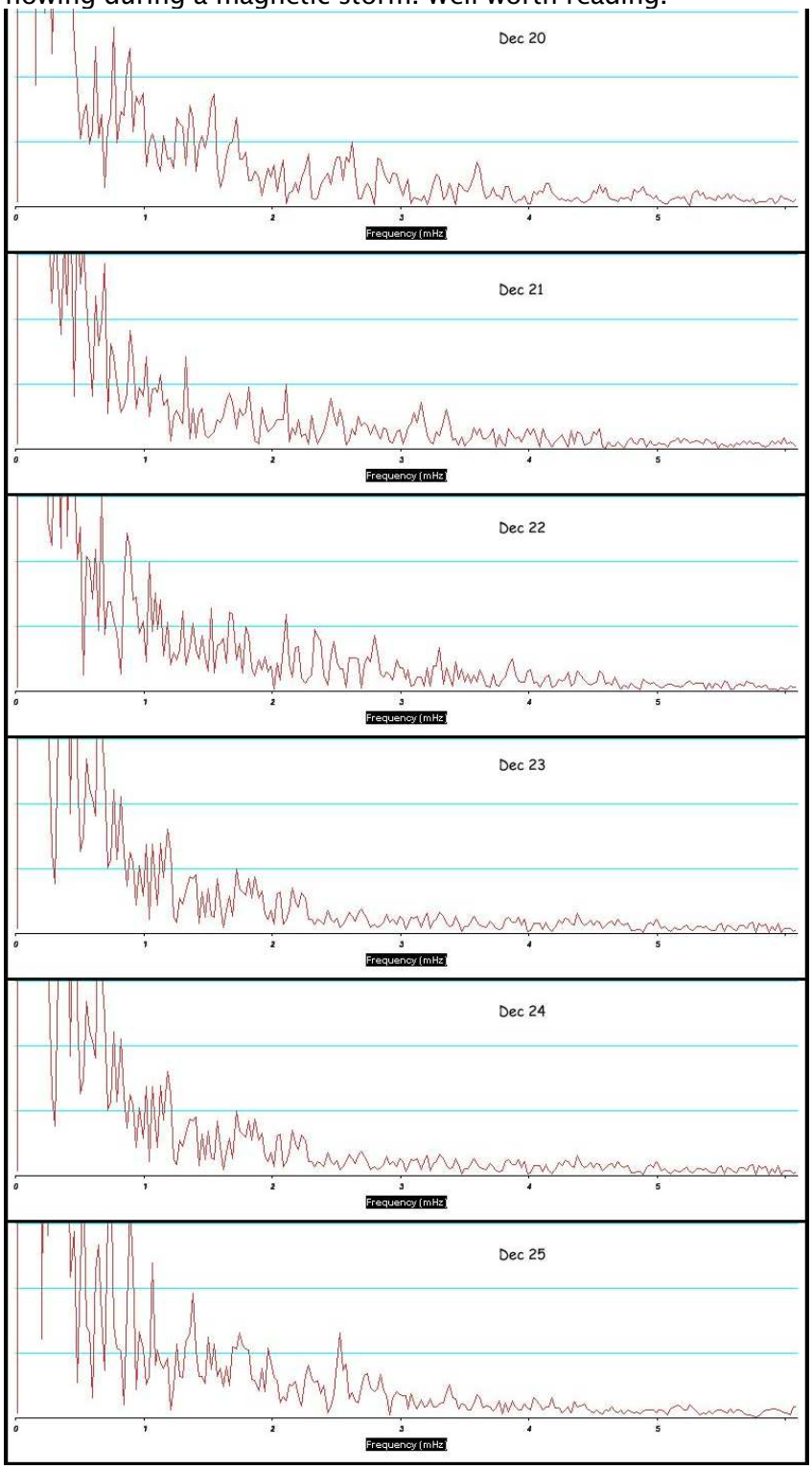


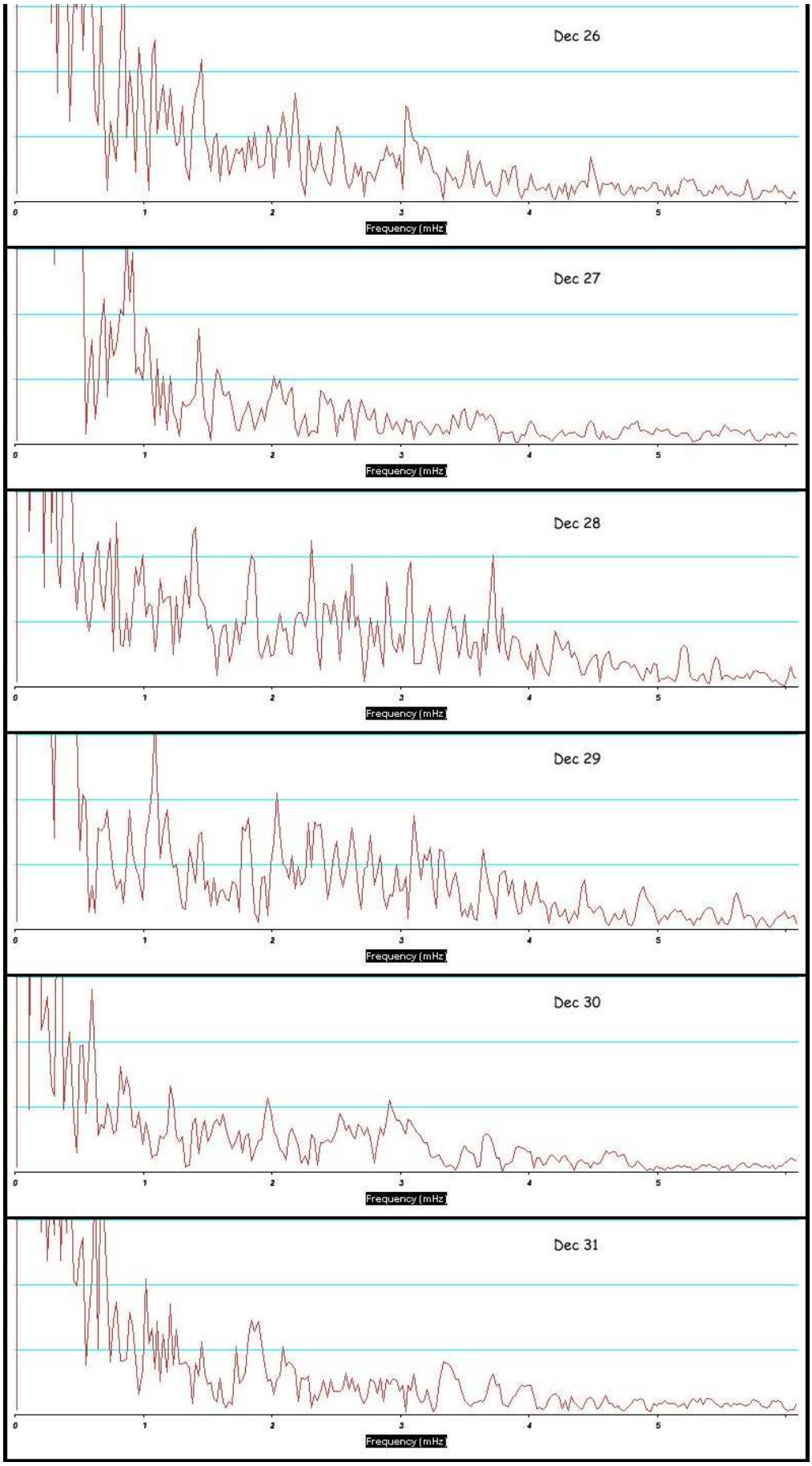
On this occasion, the field was much less steady following the transient.

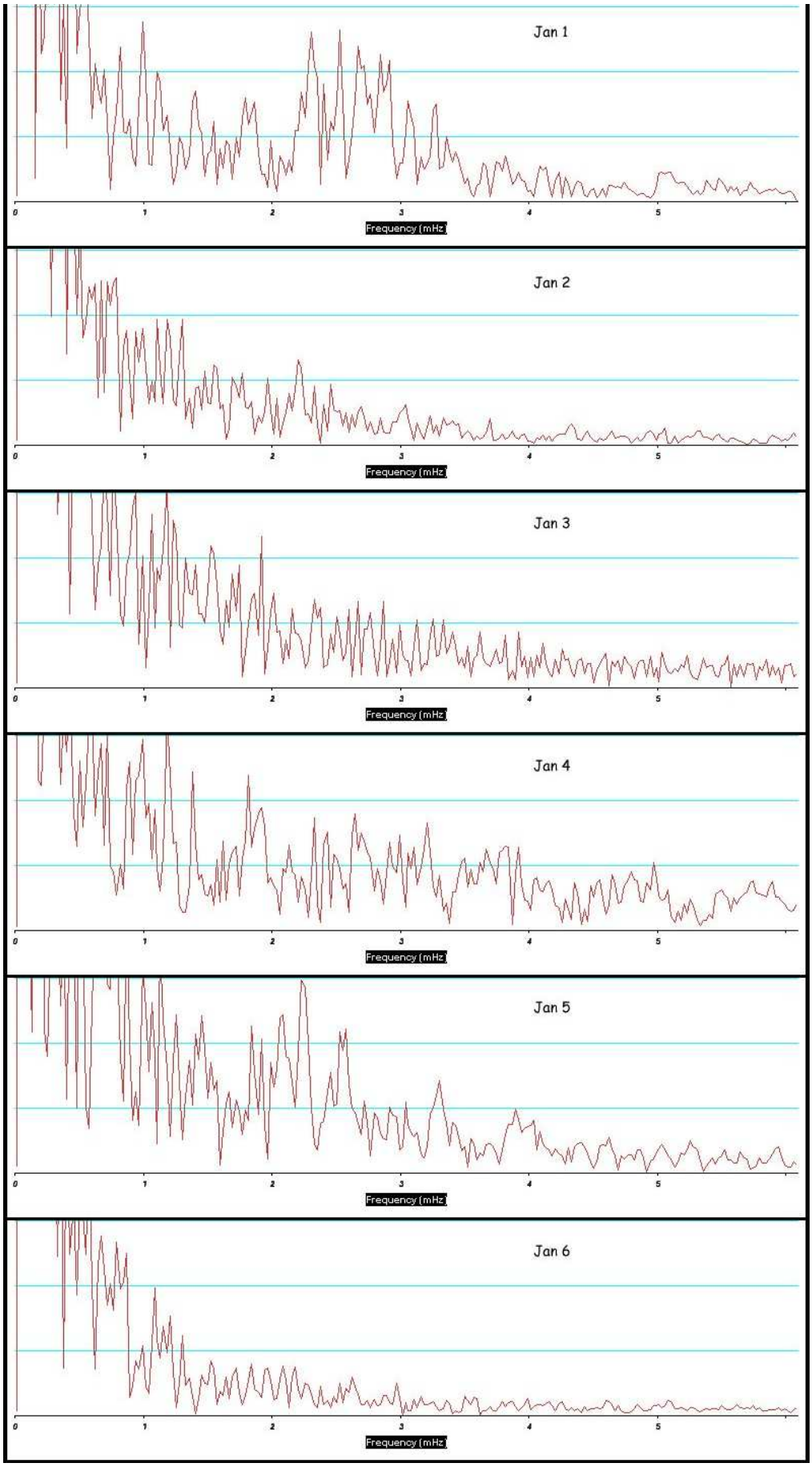
Magnetic data provided by Colin Clements and John Cook.

For those interested in aurora, there is an interesting paper in the current Astronomy & Geophysics journal regarding the observation of a stable auroral red arc over Europe on 2011 September 26/27. I had not heard of this effect before. It is not visible by eye, but is from the red

spectral line of Oxygen in direct response to heating from the increased ionospheric currents flowing during a magnetic storm. Well worth reading.




Dec 26
0
1
2
3
4
5
Frequency (mHz)
Dec 27
0
1
2
3
4
5
Frequency (mHz)
Dec 28
0
1
2
3
4
5
Frequency (mHz)
Dec 29
0
1
2
3
4
5
Frequency (mHz)
Dec 30
0
1
2
3
4
5
Frequency (mHz)
Dec 31
0
1
2
3
4
5
Frequency (mHz)


Jan 1
0
1
2
3
4
5
Frequency (mHz)
Jan 2
0
1
2
3
4
5
Frequency (mHz)
Jan 3
0
1
2
3
4
5
Frequency (mHz)
Jan 4
0
1
2
3
4
5
Frequency (mHz)
Jan 5
0
1
2
3
4
5
Frequency (mHz)
Jan 6
0
1
2
3
4
5
Frequency (mHz)